



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/630,664

07/31/2003

Charles D. Combs

113692CON-1

7920

(ATT.0020002)

7590

07/14/2006

EXAMINER

PHAN, HANH

S. H. Dworetsky

AT&T Corp

One AT&T Way

Room 2A-207

Bedminster, NJ 07921

ART UNIT

PAPER NUMBER

2613

DATE MAILED: 07/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.



### DETAILED ACTION

1. This Office Action is responsive to the Amendment filed 04/25/2006.

#### ***Double Patenting***

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 42 and 49 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-24 of U.S. Patent No. 6,654,563 (Darcie et al) in view of Brown (US Patent No. 6,523,177) and further in view of Pan (US Patent No. 6,147,786).

Regarding claims 42 and 49, Darcie et al (US Patent No. 6,654,563) discloses a communication system, comprising:

a mux node including a first lightwave interface device for communication with a head end, the mux node further including a second lightwave interface device for transmitting a plurality of optical signal including analog and digital signals; and

a mini fiber node including a third lightwave interface device for receiving the optical signal from the second lightwave interface device of the mux node (see claims 13-19 of Darcie).

Darcie differs from claims 42 and 49 in that he fails to specifically teach the mux node includes a radio frequency signal compiler that enables frequency division multiplexing of a plurality of upstream signals received from a corresponding plurality of mini fiber nodes and the mini fiber node being further configured to communicate analog and digital signals to end user equipment via a wired connection. However, Brown in US Patent No. 6,523,177 teaches a mux node (330)(Fig. 2) includes a radio frequency signal compiler (235)(Fig. 2) that enables frequency division multiplexing of a plurality of upstream signals received from a corresponding plurality of mini fiber nodes (300)(Fig. 2) (col. 2, lines 51-67 and col. 3, lines 1-23) and Pan in US Patent No. 6,147,786 teaches the mini fiber node being further configured to communicate analog and digital signals to end user equipment via a wired connection (see Fig. 1, col. 8, lines 22-67 and col. 9, lines 1-23). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the mux node includes a radio frequency signal compiler that enables frequency division multiplexing of a plurality of upstream signals received from a corresponding plurality of mini fiber nodes and the mini fiber node being further configured to communicate analog and digital signals to end user equipment via a wired connection as taught by Brown and Pan in the system of Darcie. One of ordinary skill in the art would have been motivated to do this since Brown suggests in column 2, lines 51-67 and col. 3, lines 1-23 and Pan suggests in

Art Unit: 2613

column 8, lines 22-67 and col. 9, lines 1-23 that using such the mux node includes a radio frequency signal compiler and the mini fiber node being further configured to communicate analog and digital signals to end user equipment via a wired connection have advantage of allowing combining the individual signals into the multiplexed signal and distributing analog signals and digital signals from the central office to the users.

4. Claim 50 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-24 of U.S. Patent No. 6,654,563 (Darcie et al) in view of in view of Pan (US Patent No. 6,147,786).

Regarding claim 50, Darcie et al (US Patent No. 6,654,563) discloses a network node that communicates between a head end and a plurality of mini fiber nodes, comprising:

- a first lightwave interface device for communication with a head end;

- a second lightwave interface device for transmitting a plurality of optical signals to a respective plurality of mini fiber nodes;

- a mux/demux/router component that is operative to receive electrical signals that have been converted from optical signals received from the head end, demultiplexes the received electrical signals and forwards separate demultiplexed signals to the second lightwave interface device that transmits the separate demultiplexed signals to designated mini fiber nodes (see claims 13-19 of Darcie).

Darcie differs from claims 42 and 49 in that he fails to specifically teach the mini fiber node being configured to communicate analog and digital signals to end user

Art Unit: 2613

equipment via a wired connection. However, Pan in US Patent No. 6,147,786 teaches the mini fiber node being further configured to communicate analog and digital signals to end user equipment via a wired connection (see Fig. 1, col. 8, lines 22-67 and col. 9, lines 1-23). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the mini fiber node being configured to communicate analog and digital signals to end user equipment via a wired connection as taught by Pan in the system of Darcie. One of ordinary skill in the art would have been motivated to do this since Pan suggests in column 8, lines 22-67 and col. 9, lines 1-23 that using such the mini fiber node being configured to communicate analog and digital signals to end user equipment via a wired connection have advantage of allowing distributing analog signals and digital signals from the central office to the users.

5. Claims 42 and 49 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-8 of U.S. Patent No. 6,751,417 (Combs et al) in view of Brown (US Patent No. 6,523,177) .

Regarding claims 42 and 49, Combs et al (US Patent No. 6,751,417) discloses a communication system, comprising:

a mux node including a first lightwave interface device for communication with a head end, the mux node further including a second lightwave interface device for transmitting a plurality of optical signal including analog and digital signals; and

a mini fiber node including a third lightwave interface device for receiving the optical signal from the second lightwave interface device of the mux node nodes and

the mini fiber node being further configured to communicate analog and digital signals to end user equipment via a wired connection (see claim 1 of Combs).

Combs differs from claims 42 and 49 in that he fails to specifically teach the mux node includes a radio frequency signal compiler that enables frequency division multiplexing of a plurality of upstream signals received from a corresponding plurality of mini fiber. However, Brown in US Patent No. 6,523,177 teaches a mux node (330)(Fig. 2) includes a radio frequency signal compiler (235)(Fig. 2) that enables frequency division multiplexing of a plurality of upstream signals received from a corresponding plurality of mini fiber nodes (300)(Fig. 2) (col. 2, lines 51-67 and col. 3, lines 1-23). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the mux node includes a radio frequency signal compiler that enables frequency division multiplexing of a plurality of upstream signals received from a corresponding plurality of mini fiber nodes as taught by Brown in the system of Combs. One of ordinary skill in the art would have been motivated to do this since Brown suggests in column 2, lines 51-67 and col. 3, lines 1-23 that using such the mux node includes a radio frequency signal compiler has advantage of allowing combining the individual signals into the multiplexed signal and providing a optical communication system with high speed and high capacity.

6. Claim 50 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-8 of U.S. Patent No. 6,751,417 (Combs et al) in view of in view of Frigo (US Patent No. 5,521,734).

Regarding claim 50, Combs et al (US Patent No. 6,751,417) discloses a network node that communicates between a head end and a plurality of mini fiber nodes, comprising:

a first lightwave interface device for communication with a head end;

a second lightwave interface device for transmitting a plurality of optical signals to a respective plurality of mini fiber nodes and wherein each of the plurality of mini fiber nodes being configured to communicate analog and digital signals to end user equipment via a wired connection (see claims 13-19 of Darcie).

Combs differs from claim 50 in that he fails to teach a mux/demux/router component that is operative to receive electrical signals that have been converted from optical signals received from the head end, demultiplexs the received electrical signals and forwards separate demultiplexed signals to the second lightwave interface device that transmits the separate demultiplexed signals to designated mini fiber nodes. However, Frigo in US Patent No. 5,521,734 teaches a mux/demux/router component (220)(Fig. 3) that is operative to receive electrical signals that have been converted from optical signals received from the head end, demultiplexs (i.e., DMUX 128)(Fig. 3) the received electrical signals and forwards separate demultiplexed signals to the second lightwave interface device (116)(Fig. 3) that transmits the separate demultiplexed signals to designated mini fiber nodes (i.e., ONU#1-ONU<sub>n</sub>-1)(col. 4, lines 37-61). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the mux/demux/router component that is operative to receive electrical signals that have been converted from optical signals received from



Art Unit: 2613

the head end, demultiplexes the received electrical signals and forwards separate demultiplexed signals to the second lightwave interface device that transmits the separate demultiplexed signals to designated mini fiber nodes as taught by Frigo in the system of Combs. One of ordinary skill in the art would have been motivated to do this since Frigo suggests in column 4, lines 37-61 that using such a mux/demux/router component has advantage of allowing distributing the signals from the central office to the designated mini fiber nodes.

7. Claims 42 and 49 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 38 and 42 of copending Application No. 10/721,864 (Combs et al) in view of view of Brown (US Patent No. 6,523,177).

Regarding claims 42 and 49, Combs et al (copending Application No. 10/721,864) discloses a communication system, comprising:

a mux node including a first lightwave interface device for communication with a head end, the mux node further including a second lightwave interface device for transmitting a plurality of optical signal including analog and digital signals; and

a mini fiber node including a third lightwave interface device for receiving the optical signal from the second lightwave interface device of the mux node nodes and the mini fiber node being further configured to communicate analog and digital signals to end user equipment via a wired connection (see claims 38 and 42 of Combs).

Combs differs from claims 42 and 49 in that he fails to specifically teach the mux node includes a radio frequency signal compiler that enables frequency division multiplexing of a plurality of upstream signals received from a corresponding plurality of mini fiber. However, Brown in US Patent No. 6,523,177 teaches a mux node (330)(Fig. 2) includes a radio frequency signal compiler (235)(Fig. 2) that enables frequency division multiplexing of a plurality of upstream signals received from a corresponding plurality of mini fiber nodes (300)(Fig. 2) (col. 2, lines 51-67 and col. 3, lines 1-23). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the mux node includes a radio frequency signal compiler that enables frequency division multiplexing of a plurality of upstream signals received from a corresponding plurality of mini fiber nodes as taught by Brown in the system of Combs. One of ordinary skill in the art would have been motivated to do this since Brown suggests in column 2, lines 51-67 and col. 3, lines 1-23 that using such the mux node includes a radio frequency signal compiler has advantage of allowing combining the individual signals into the multiplexed signal and providing a optical communication system with high speed and high capacity.

This is a provisional obviousness-type double patenting rejection.

8. Claim 50 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 38 and 42 of copending Application No. 10/721,864 (Combs et al). Although the conflicting claims are not identical, they are not patentably distinct from each other because the limitations

Art Unit: 2613

recited in claim 50 of the instant application are encompassed by claims 38 and 42 of copending Application No. 10/721,864 (Combs et al).

Regarding claim 50, Combs et al (copending Application No. 10/721,864) discloses a network node that communicates between a head end and a plurality of mini fiber nodes, comprising:

a first lightwave interface device for communication with a head end;

a second lightwave interface device for transmitting a plurality of optical signals to a respective plurality of mini fiber nodes and wherein each of the plurality of mini fiber nodes being configured to communicate analog and digital signals to end user equipment via a wired connection;

a mux/demux/router component that is operative to receive electrical signals that have been converted from optical signals received from the head end, demultiplexes the received electrical signals and forwards separate demultiplexed signals to the second lightwave interface device that transmits the separate demultiplexed signals to designated mini fiber nodes (see claims 38 and 42 of Combs).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

### ***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

Art Unit: 2613

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 50 is rejected under 35 U.S.C. 103(a) as being unpatentable over by Feldman et al (U.S. Patent No. 6,577,414) in view of Frigo (US Patent No. 5,521,734).

Regarding claim 50, referring to figures 1-5 and 7, Feldman teaches a network node (i.e., HUB 126, Fig. 2) that communicates between a head end (i.e., headend 110, Fig. 2) and a plurality of mini fiber nodes (i.e., mini fiber nodes 150, Figs. 1 and 4), comprising:

a first lightwave interface device (i.e., optical splitter 230, Fig. 2) for communication with a head end (i.e., headend 110, Fig. 2);

a second lightwave interface device (i.e., CWDM 232, optical splitter 231 and optical combiner 236, Fig. 2) for transmitting a plurality of optical signals to a respective plurality of mini fiber nodes (i.e., mini fiber nodes 150, Figs. 1 and 4), wherein each of the plurality of mini fiber nodes being configured to communicate analog and digital signals to end user equipment (i.e., cable modem, set top box, telephone, TV..., Fig. 4) via a wired connection, wherein at least two of the optical signals include both analog and digital (see from col. 3, line 59 to col. 7, line 42).

Feldman differs from claim 50 in that he fails to teach a mux/demux/router component that is operative to receive electrical signals that have been converted from optical signals received from the head end, demultiplexes the received electrical signals and forwards separate demultiplexed signals to the second lightwave interface device that transmits the separate demultiplexed signals to designated mini fiber nodes.

However, Frigo in US Patent No. 5,521,734 teaches a mux/demux/router component

Art Unit: 2613

(220)(Fig. 3) that is operative to receive electrical signals that have been converted from optical signals received from the head end, demultiplexes (i.e., DMUX 128)(Fig. 3) the received electrical signals and forwards separate demultiplexed signals to the second lightwave interface device (116)(Fig. 3) that transmits the separate demultiplexed signals to designated mini fiber nodes (i.e., ONU#1-ONU<sub>n</sub>-1)(col. 4, lines 37-61). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the mux/demux/router component that is operative to receive electrical signals that have been converted from optical signals received from the head end, demultiplexes the received electrical signals and forwards separate demultiplexed signals to the second lightwave interface device that transmits the separate demultiplexed signals to designated mini fiber nodes as taught by Frigo in the system of Feldman. One of ordinary skill in the art would have been motivated to do this since Frigo suggests in column 4, lines 37-61 that using such a mux/demux/router component has advantage of allowing distributing the signals including analog signals and digital signals from the central office to the designated mini fiber nodes.

#### ***Allowable Subject Matter***

11. Claims 42 and 49 are allowed (if overcome the double patenting rejection).

#### ***Response to Arguments***

12. Applicant's arguments filed 04/25/2006 have been fully considered but they are not persuasive.

The applicant's arguments to claim independent 50 are not persuasive. The independent claim 50 includes the limitation of **"a mux/demux/router component that is operative to receive electrical signals that have been converted from optical signals received from the head end, demultiplexs the received electrical signals and forwards separate demultiplexed signals to the second lightwave interface device that transmits the separate demultiplexed signals to designated mini fiber nodes"** and applicant argues that the cited references (Feldman and Frigo) fail to teach such limitation. The examiner respectfully disagrees. As indicated in Figure 3, Frigo in teaches a mux/demux/router component (MUX 142, Processor 144, DMUX 128) that is operative to receive electrical signals that have been converted from optical signals received from the head end 210 and the DMUX 128 demultiplexs the received electrical signals and forwards separate demultiplexed signals to the second lightwave interface device (i.e., lasers 116, Fig. 3) that transmits the separate demultiplexed signals to designated mini fiber nodes (i.e., ONU#1-ONU<sub>n-1</sub>)(col. 4, lines 27-61).

Therefore, it is believed that the limitations of claim 50 are still met by the combination of Feldman and Frigo and the rejection is still maintained.

### ***Conclusion***

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

Art Unit: 2613

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh Phan whose telephone number is (571)272-3035.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached on (571)272-3022. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-4700.

  
**HANH PHAN**  
**PRIMARY EXAMINER**